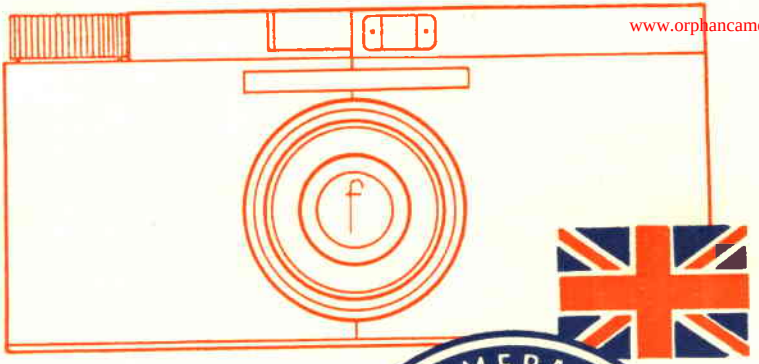
PURMA GUIDE



WHY WRITE A BOOK ABOUT IT?

There is no ideal all-round camera; every camera is the result of a compromise between performance and price—whether you measure the price in terms of speed, convenience, or simply pounds, shillings and pence. The box camera, the miniature, the reflex, and the stand camera, offer certain characteristic advantages accompanied in each case by equally characteristic disadvantages.

In the Purma Special we have the result of a new type of compromise—a compromise between the desire to take good photographs and a strong reluctance to go to any trouble over them. It is, in fact, a lazy man's camera, and those who condemn it on that ground ignore the tremendous contribution to human progress made by men who were too lazy to be happy doing things the hard way.

The shutter speed is the only thing about the Purma Special which can be adjusted, and even this operation calls for neither knobs nor levers, it is regulated simply by the manner of holding the camera. Everything else is either done for you or it cannot be done at all. The lens has not only a fixed focus, but a fixed aperture, and it is neither luck nor coincidence that this combination of distance and stop is the very one which the good photographer uses most on four days out of five. The good photographer arrives at this setting after some deliberation, consultation of an exposure meter or guide, and finally, two separate adjustments of focus and aperture. This camera delivers it ready-made.

In many ways the Purma Special is the ideal camera for novices but its utter simplicity is responsible for its frequent appearance in more exalted company. More than one Fleet Street ace carries the Purma Special as a sort of insurance policy for the occasions when split seconds can rob the Dailies of a scoop.

Naturally, this simplification is a mixed blessing: there are many things that the camera will not do and as many others that it does indifferently. No attempt is made to

gloss over the very obvious limitations of the camera in the following pages. It is, in fact, very necessary for these limitations to be understood if consistently good results are to be expected. This is one answer to those who ask "If the Purma Special is such a simple affair, why write a book about it?"

The other answer is—read the book and find out.

THE PURMA SPECIAL

The Purma Special is a miniature camera taking 16 square pictures $1\frac{1}{4} \times 1\frac{1}{4}$ in. (3.2 × 3.2 cm.) on standard V.P. film (No. 27 or 127). It weighs 12 ozs. (340 grms.) and measures $6 \times 2\frac{1}{4} \times 2\frac{3}{4}$ in. (15.3 × 5.7 × 7 cm.).

The body of the camera is wider at the middle than at the ends to accommodate the special metal focal plane shutter.

The top carries the built-in optical direct-vision viewfinder, film-winding knob, shutter setting lever, and shutter-release button.

The original Purma camera, known as the *Purma Speed*, had a metal body and six instantaneous speeds from 1/25 to 1/200 sec. It is now obsolete.

The Lens

The lens is a Beck anastigmat with a fixed aperture of *f* 6.3, and a focal length of $2\frac{1}{4}$ in. (5.7 cm.). All surfaces with the exception of the outside of the front and back elements are "bloomed" to reduce internal reflections.

When not in use, the lens in its cylindrical plastic mount retracts and is held down by a black plastic cap which screws on to a threaded boss on the camera body. Unscrewing the cap allows a spring to slide the lens out into the working position.

This position is fixed to give a sharp image of all objects from 10 ft. in front of the camera to the horizon.

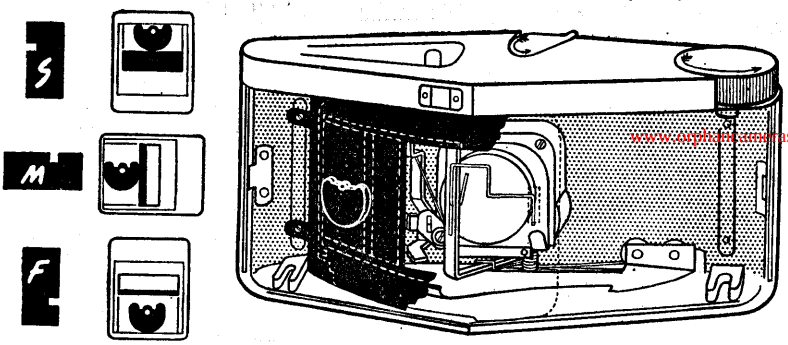
Supplementary lenses described later are available for photographing subjects at less than 10 ft. from the camera.

The Shutter

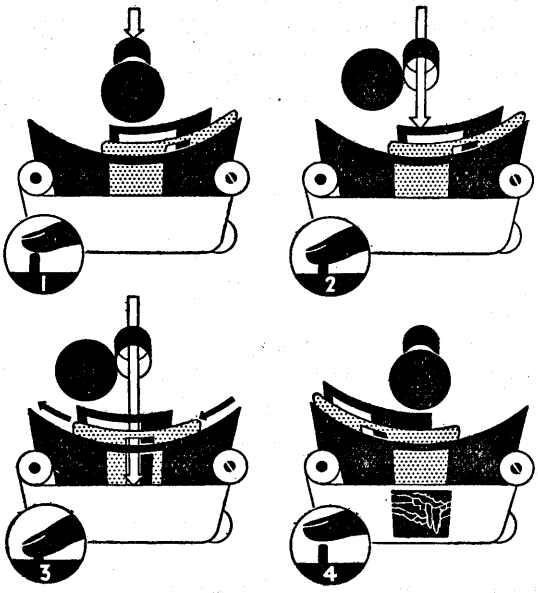
The shutter has no means of external adjustment. Its speed is decided solely by the manner of holding the camera.

There are three speeds—Slow (1/25 sec.), Medium (1/150 sec.) and Fast (1/450 sec.). When the camera is held level, the shutter automatically sets itself to work at 1/150 sec.; with the camera on its left side, the shutter speed

THE SHUTTER



Cut-away view of focal plane shutter. A pivoted weight controls the width of the shutter slit. *Top:* Slow Speed (1/25 sec.). Camera on left-side; slit widest; weight opposing shutter spring. *Centre:* Medium Speed (1/150 sec.). Camera level; slit narrower; weight neutral. *Bottom:* Fast Speed (1/450 sec.). Camera on right side; slit narrowest; weight helping spring.



HOW IT WORKS

1. *Before pressing the release button.* A plate behind the lens "caps" it to stop light from reaching the film while the shutter is being set. **2.** *First pressure on release button.* Capping plate moves away and allows light to pass into camera. **3.** *Final pressure on release button.* This releases the shutter and as the slit moves across light passes through and exposes the film. **4.** *When the release button is freed.* The capping plate covers the back of the lens.

becomes 1/450 sec.; and on its right side, 1/25 sec. As the picture is square, the shape is not altered by turning the camera to set the shutter speed.

The shutter itself is of the focal-plane pattern. That is, it works close to the actual film surface and admits light to the negative through a slit which travels—with the camera in the level position—across the picture from right to left when the shutter release is pressed.

The slit is formed in a curved metal plate which runs in guides. A metal vane, attached to this plate and linked to a pivoted brass weight, narrows or widens the slit according to the position of the camera, varying the width from about $\frac{1}{16}$ in. in the Fast position to about $\frac{1}{2}$ in. in the Slow. As the pivoted weight is attached to the main shutter plate, it also helps to control the *rate* at which the shutter travels. In the Slow position it acts *against* the shutter spring; in the Medium position it has no effect, and in the Fast position it acts *with* the spring.

A metal disc covers the back of the lens aperture to prevent light from reaching the film when the shutter is being set. This disc is swung out of the way by the "first pressure" on the shutter release button.

The shutter parts are of rust-proof metal.

A moulded plastic lever, fitted flush with the upper surface of the camera to the right of the view finder window, sets the shutter. It has a white arrow on top to show the direction in which to set it. The method of setting is the same for all shutter speeds. Once the lever has been set it can be returned to its original position only by releasing the shutter with the press button. Any attempt to force it back will damage the shutter.

The shutter release button lies in a recess on the top surface of the camera. When the lens is held in the retracted position by its cap, the shutter release button is automatically locked to prevent accidental exposure. The release button must never be pressed unless the lens is in the working position.

The Viewfinder

The viewfinder is of the optical direct-vision type giving a reduced-scale image of the field covered by the lens. With the eye close to the finder and looking straight through the centre, the view seen framed by the square aperture is correct for all subjects beyond ten feet from the camera.

When taking photographs of subjects nearer than this with the aid of one of the supplementary lenses, the finder is no longer accurate. (See pp. 54 to 57.)

As a guide to the manner of holding the camera to adjust the shutter speed, FAST, and SLOW are marked to the right and left of the viewfinder, each word being upright when the camera is held for the corresponding speed.

The Body

The body is made up of two black plastic mouldings, one carrying the lens, shutter mechanism, viewfinder and film wind, and the other forming a detachable back and carrying the film pressure plate and number windows.

A curved steel plate across the inside of the body protects the shutter mechanism and forms the film guide and aperture. At each corner of the curved film aperture the metal frame is raised so that the film lies flat against the pressure plate. Spring steel clips at each end of the back hold it in position when it is pressed home.

The word TOP, stamped on the pressure plate on the detachable back indicates the correct way round for replacement, the top of the camera being the face carrying the viewfinder, release, etc.

Red windows are normally fitted in the film-number apertures, but if panchromatic film is to be used, the green transparent discs supplied with the camera must be fitted instead. To change the discs, the spring retaining rings should be eased out with the point of a penknife.

HANDLING THE PURMA

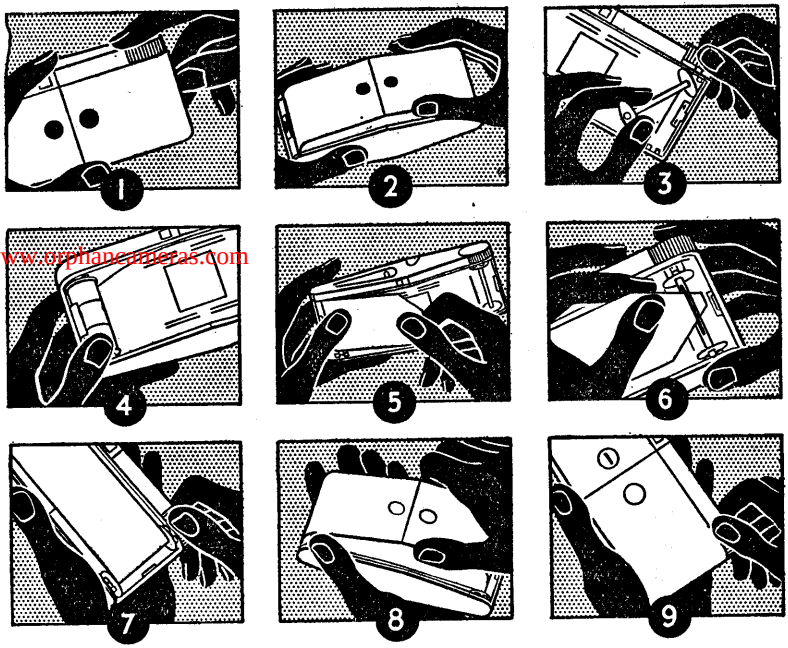
Before you put a film into the camera, spend some time practising with it until you are familiar with the operations of holding and shooting.

How to Load the Purma

1. **Free back at both ends.**
2. **Remove back.**
3. **Insert empty spool at winding end.**
4. **Insert full roll of film.**
5. **Break paper seal and pull off 6 in. of paper.**
6. **Attach end of paper to empty spool.**
7. **Wind until taut.**
8. **Replace back.**
9. **Wind to first exposure.**

1. Lever the back free by pressing your thumbnail into the recesses at each end of the body.
2. Slide both ends of the back out at the same time: do not open it like a book or you will damage the body or the spring clips.
3. Drop the *plain* end of the empty spool into the hole opposite the winding knob and pull out the knob to allow the slotted end of the spool to fall into place. Release the knob and turn it until it engages with the slot. If the knob does not go back flush with the top of the camera the spool is not correctly fitted.
4. The ends of the full spool fit into the slots at each side of the recess. When the spool is pressed down it is held in place by the plated spring at the back of the recess. Blow out any dust from inside the camera before you thread the film.
5. Do not break the seal before the film is in the camera, or it may slip from your fingers and unroll.
6. Thread the tapered end of the backing paper into the *wide* side of the slit in the winding spool.
7. Make sure that the backing paper lies absolutely flat and runs smoothly on to the winding spool while you give the knob a couple of turns.
8. Brush away any specks of dust or fluff from the edges of the light trap where the back joins the body. Look for the word TOP stamped on the film pressure plate, and place this edge opposite the face of the camera which carries the viewfinder and shutter controls. Push both ends of the back into place at the same time and make sure that it is pressed well home.

HOW TO LOAD THE PURMA



1. Free the back at both ends.
2. Remove back.
3. Insert an empty spool at winding end.
4. Insert a roll of film at feeding end.
5. Pull off 6 in. of backing paper.
6. Push end of backing paper through wide side of slit.
7. Wind until taut.
8. Replace back with TOP at top.
9. Wind figure 1 into first window.

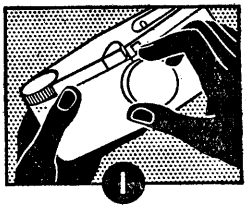
Never press on the shutter release button with the lens cap in place.

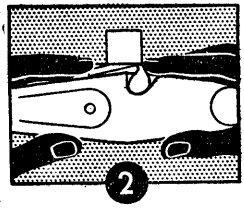
2. When the cap is unscrewed, the lens slides out into the working position and unlocks the shutter mechanism. Do not worry about the slight side play between the lens mount and its housing; this is normal. Put the cap in your pocket, or you may lose it.
3. The shutter is set by pushing the lever above the word PURMA in the direction of the white arrow.
   Make a habit of setting the shutter immediately before you want to shoot. If you set it earlier, you run the risk of releasing it accidently, and unless you think of the two actions of setting and releasing together, you will never be sure whether the shutter is set or not. Always use your right forefinger for setting the shutter and then keep it well away from the setting lever. The lever flies back to the safe position as the shutter is released, and if your finger is in the way, you will spoil the picture.
4. Plant your feet firmly on the ground, and make your body into a steady support for the camera. Hold the camera level and press it firmly against your nose and forehead. If the horizon shows in the picture, make sure that it is parallel to the top and bottom of the viewfinder or you will waste picture space in squaring it up later.
   Keep your forefinger bent well over the shutter release or you will find it difficult to apply the final pressure. Press down slowly, do not jerk.
   The release button moves fairly easily for about $\frac{1}{8}$ in., and then, when about to release, becomes very much harder to press. If you are not careful you may shake the camera at the instant of exposure. A firm, but not fierce, grip on the camera, and slow, steady squeezing of the release button is the answer. Because of the weight of the shutter, there is a sharp impact at the end of its travel, but as this occurs *after* exposure, it does no harm.
5. If the number is showing in the first window, wind until you see the same number in the second window. If the number is showing in the second window (nearest to the winding knob) wind until the next number shows in the first window. The appearance of a number in either window is preceded by a line of three or four dots. Always wind to a fresh frame immediately after making an exposure, or you may forget and spoil two pictures.
6. The shutter lock does not come into operation until the lens cap has been screwed right down. If you have set the shutter and then not made an exposure, you can release the setting lever by unscrewing the lens cap a quarter of a turn and pressing the shutter release button.

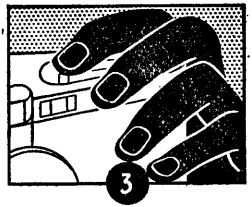
How to Unload the Purma

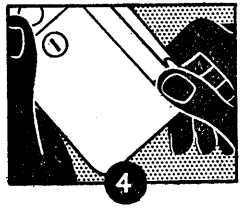
1. **Wind end of paper to second window.**
2. **Take off back of camera.**

HOW TO SHOOT WITH THE PURMA





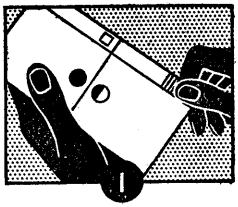


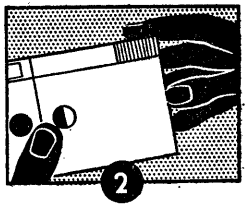


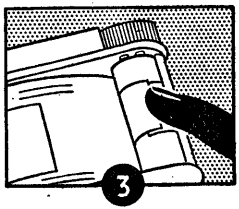
1. Unscrew lens cap.
2. Push setting lever in direction of arrow.
3. Sight subject in viewfinder and press shutter release.
4. Wind film to next frame.

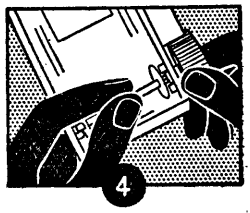
HOW TO UNLOAD THE PURMA

1. Turn film winding knob until end of paper shows in second window.
2. Remove camera back, easing off both ends together.
3. Stick down paper seal and remove roll.
4. Transfer empty spool to winding end and replace back of camera, TOP to top.









3. Stick down seal and remove roll.
4. Transfer empty spool to winding end.
5. Replace back of camera.

3. Fold about half an inch of the backing paper under, and turn the winding knob until only the end of the gummed paper seal is left sticking out. Moisten the gum and press the seal on to the roll as you continue to wind, then remove the sealed roll. In this way there is no risk of letting the unsealed roll slip from your fingers. If the film is not going to be developed immediately, return it to its wrapping foil and carton.

FILMS AND FILTERS FOR THE PURMA

The Purma takes V.P. (Nos. 27 and 127) films with a numbered paper backing wound on a metal spool. Films of this size are manufactured by most makers of photographic materials in two types of emulsion—orthochromatic and panchromatic—and in a range of speeds. Without understanding the effects of the type of film, whether orthochromatic or panchromatic, and its speed, good photography is impossible.

Orthochromatic Films

A photographic film does not respond equally to all the rays of light which fall on it when the shutter is open. Some rays act upon the emulsion very strongly, while others are much weaker. Orthochromatic or ortho film is highly sensitive to blue light, less so to yellow, green and orange, and practically not at all to red. For this reason, an orthochromatic film may be developed by a red darkroom light. Modern research has produced films of this type with greatly improved sensitivity to the yellow, green and orange rays, which give a better black and white rendering of the colours of our photographic subjects. These films are generally indicated by "-chrome" at the end of the brand name and their high speed and good photographic qualities make them probably the most popular films for amateur use.

Panchromatic Films

Panchromatic or pan film is almost equally sensitive to all colours and for that reason it gives a better all-round rendering of the average photographic subject. Because of their sensitivity to light of all colours, panchromatic films should be opened and processed in complete darkness or by a very dim green safelight. The high speed panchromatic films are excessively sensitive to red light with the result that red tones in the subject may come out unnaturally pale.

Film Speeds

The speed of the film is always stated on the carton in figures which may refer to any one of a number of different classifying systems. These systems are based on different methods of measurement and while they cannot be accurately compared, the table given below can be regarded as a satisfactory practical guide.

COMPARISON OF FILM SPEED RATINGS

B.S. and A.S.A. Index	*B.S. Log Index*	*Weston*	*G.E.*	*H. & D.*	*European Scheiner*	*American Scheiner*	*DIN*
10	21°	8	12	400	23°	19°	12/10
16	23°	12	18	660	25°	21°	14/10
20	24°	16	24	800	26°	22°	15/10
32	26°	24	36	1300	27°	24°	17/10
40	27°	32	48	1600	29°	25°	18/10
64	29°	48	64	2400	30°	27°	19/10
80	30°	64	96	3000	32°	28°	21/10
125	32°	96	130	4800	33°	30°	22/10
160	33°	128	190	6400	35°	32°	24/10

As the Purma has only three shutter speeds, it cannot take into account small differences between one film speed and the next. This allows a much simpler classification of film speeds.

All films below 24° Sch. (European) are too slow to be of much use to the Purma which cannot give an exposure longer than 1/25 sec. The remaining speeds can be grouped into three: Low speed (24° Sch. to 26° Sch.), Middle speed (27° Sch. to 29° Sch.) and High speed (30° Sch. to 32° Sch.).

The Low speed films are roughly half as fast as the Middle speed films (they therefore require twice the exposure) and the High speed films are roughly twice as fast as the Middle speed films (they therefore require only half the exposure).

Latitude

The film is capable of responding to a very wide range of light values, from very dull to very bright—a much wider range than is found in the average subject. It is thus generally possible to stray from the so-called correct exposure and still be within the range of the film's power to reproduce the light and shade of the subject. Thanks to this latitude the three shutter speeds of the Purma will usually include one which is near enough to the correct exposure for practical purposes. As the latitude of the film extends more above than below the correct exposure, it is a safe rule, when the correct exposure lies between two shutter speeds, to choose the slower,—i.e., to over-expose.

Grain

The black parts of the negative are formed of microscopic grains of metallic silver. These grains are too small to show in contact prints or small enlargements, but in big enlargements they can appear as a general spottiness which breaks up the definition of sharp lines and destroys detail.

The size of the grain usually varies with the speed of the film. Low speed films have a relatively fine grain and give the best enlargements. High speed films have a much coarser grain which shows more when enlarged to the same degree.

Some developers tend to leave the negative with a coarser grain than others. Ordinary developers, suitable for roll films larger than V.P., are unsatisfactory for negatives as small as those of the Purma. For all ordinary sizes of enlargement any of the proprietary fine grain developers will do, but for minimum grain size, one of the ultra fine grain formulae must be used. The disadvantage of the latter is that they may require up to three times as much exposure, which practically rules them out for Purma photography.

When to Use Which

The best film for everyday use is undoubtedly the Middle speed panchromatic kind. This is not too slow for bright winter days and not too fast for strong summer lighting. It has a grain size fine enough for all normal enlargement and its tone rendering of natural colours is the best possible. Its balanced colour sensitivity makes it excellent for portraiture, particularly of children and young women whose complexions would be reproduced in unduly dark tones by orthochromatic film. Disadvantages: It must be handled in complete darkness or by a very weak green safelight, and it costs more than orthochromatic film.

Next in order of all-round usefulness comes the Middle speed orthochromatic film. It has most of the good qualities of its panchromatic relative, but it has not the same balanced colour sensitivity. However, average subjects are sufficiently well rendered. When used for portraiture, its lack of sensitivity to red means that it darkens flesh tones and sun tan, and is apt to emphasise facial blemishes. On the other hand, it costs less.

The High speed panchromatic films should be reserved for such special occasions as photography in the dull winter months, indoor and artificial lighting work, and to allow the

fastest shutter speeds to be used for moving subjects. Against the very high speed of such films must be set coarser grain, need for greater care in handling, paleness of red tones, and last but not least, higher cost than of orthochromatic film.

Low speed films give the finest grain, but they limit the use of the Purma to a narrow range of subjects and lighting.

FILMS FOR THE PURMA

Film	*Type*	*Grain*
Ensign:		
Ultrachrome	Middle speed ortho	Medium
Gevaert:		
Panchromosa	Middle speed pan	Fine
Superchrome	Middle speed ortho	Fine
Ilford:		
Selochrome	Middle speed ortho	Fine
Selo H.P.3	High speed pan	Medium
Kodak:		
Plus X	Middle speed pan	Fine
Verichrome	Middle speed ortho	Fine
Super XX	High speed pan	Medium
Panatomic X	Low speed pan	Very fine

What is a Filter

A filter is a coloured glass disc which is fitted in front of the camera lens to prevent some of the light from reaching the film. It is used to correct the tendency of the film to see some colours duller than we do, and some brighter.

A filter tends to brighten its own colour. It tends to darken all other colours.

Nine times out of ten you will want to use a colour filter to darken the blue of the sky and make white clouds, and the yellow, green and brown of the landscape, stand out in their true natural brilliance.

This can be done by a yellow or green filter; the particular colour and depth of tint depending upon the sort of film you are using and how dark you want the blue sky to look.

TAKING THE PHOTOGRAPH

Knowing *how* to use the three shutter speeds of the Purma will not help you to take photographs unless you know *when* to use them.

If you shoot beach scenes with a High speed film in your camera in strong sunlight with Slow shutter speed you will produce an almost black negative, while if you shoot on a dull December morning with a Low speed film at Fast speed you will get an almost clear negative. Both will be quite useless: what is wanted is a negative which shows the brightest parts of the subject as not quite opaque and the darkest as not quite transparent, with all the intermediate tones reproduced in proportion—i.e., a negative which has been given the correct exposure.

What is the correct exposure? Before we can answer this question we must first know two things: the speed of the film, and the strength of the light.

The Effect of Film Speed

To produce the same degree of blackening of the negative, light must act for a longer time on a slower film than on a faster one—i.e., the slower film needs a longer exposure under the same lighting conditions.

As grouped for the Purma user (see p. 18) Low speed films need twice as much exposure as Middle speed films and four times as much as High speed films.

The Strength of the Light

The strength of daylight varies according to the month and the time of day. In winter the light is weaker than in summer; at mid-day it is stronger than in the morning or evening.

The photographic value of the sunlight also depends upon how much of it gets through the clouds and haze. If there are heavy clouds obscuring the sun, the light at mid-day in July can be weaker than on a clear December morning.

So the weather must be taken into account in deciding what exposure to give.

Bearing in mind the limited range of the Purma shutter, only three very broad types of lighting need be considered at any time of year:—

Bright: Sun shining in a clear sky.
Good: Normal fine weather with the sun just strong enough to produce faintly visible shadows.
Dull:—Sky completely covered with cloud through which the sun cannot be seen.

Good light needs three times as much exposure as Bright light. Dull light needs three to six times as much exposure as Good light.

The Type of Subject

A photograph is made by light reflected from the subject. The light reflected from a whitewashed cottage will act upon the film much more strongly than the weaker reflection from a dark-timbered barn, although the same daylight may be illuminating both subjects equally. The barn, therefore, will need a longer exposure than the cottage. Similarly, an open landscape or seascape will need a much shorter exposure than one with heavy masses of buildings, trees, or groups of people in it, particularly if they form the interest of the picture.

Here again, three groups are sufficient for the simplified technique of Purma photography:—

Light: Open landscapes without important foreground. Snow scenes.
Normal: Open landscapes with important foreground figures or objects. Wide streets and squares.
Dark: Figures and buildings in narrow streets, under trees or in very well-lit interiors. Portraits in shade.

Normal subjects need two to three times the exposure for Light. Dark subjects three to six times the exposure for Normal.

Controlling Exposure with the Shutter

The right exposure for any photograph depends upon the factors already discussed:

1. The Film Speed (Low, Middle or High).
2. The Daylight (Bright, Good, Dull) for the particular time of day and year.
3. The Subject (Light, Normal, Dark).

In practice, once the film has been chosen, exposure is controlled by varying the size of the lens aperture and the shutter speed. Most cameras allow control of both lens aperture and shutter speed, but the Purma lens aperture is fixed and *exposure is controlled by the shutter speed alone.*

The three shutter speeds are: Slow—1/25 sec., Medium—1/150 sec., and Fast—1/450 sec.

Another way of putting this makes it easier to understand what happens when a change is made from one speed to another, i.e.: Slow—18/450 sec., Medium—3/450 sec., Fast—1/450 sec.

In changing over from Medium to Slow, therefore, the exposure becomes *six times slower*—i.e. from 3 to 18—and in going from Medium to Fast, the exposure becomes *three times faster*—i.e. from 3 to 1.

Practical Exposure Guide

If you cannot be bothered with technicalities, or have no time to be exact, the following rule will give you a very high proportion of satisfactory negatives:

Middle Speed Film + Good Light + Normal Subject = MEDIUM SHUTTER SPEED.

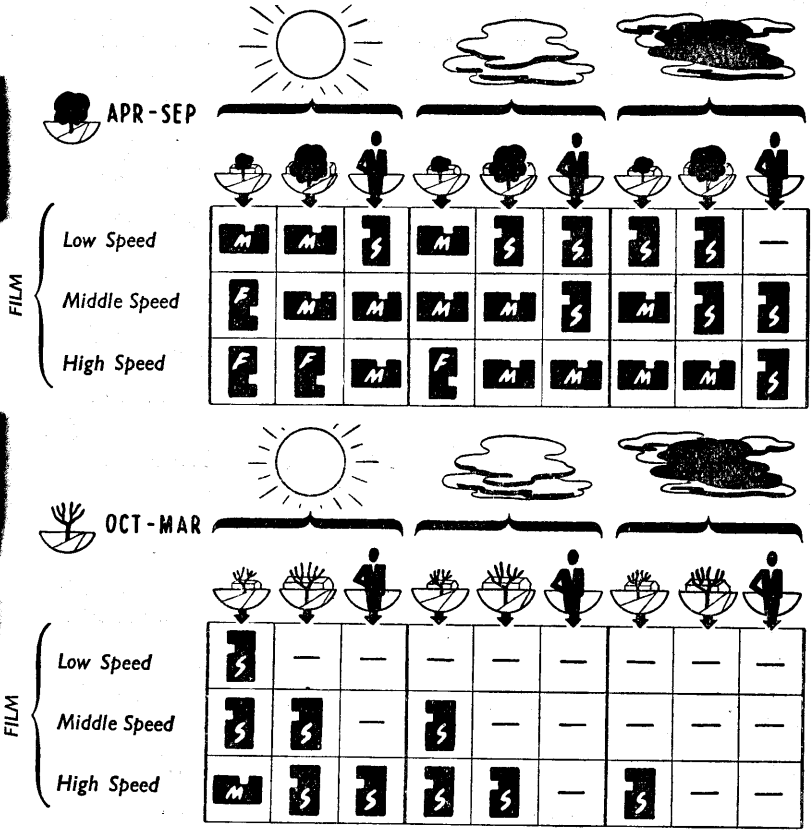
For other films, lighting and subjects, step up the shutter speed to Fast when at least *two* of the other factors go up a step:

High Speed Film + Bright Light + Normal Subject = FAST SHUTTER SPEED.

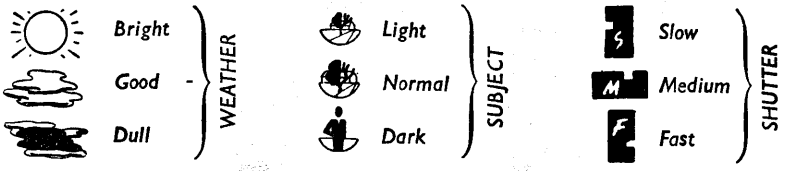
Step down to Slow when at least *two* of the other factors go down a step:

Middle Speed Film + Dull Light + Dark Subject = SLOW SHUTTER SPEED.

EXPOSURE GUIDE FOR THE PURMA



Select upper or lower table for season. Pick out subject (Light, Normal, or Dark); for lighting (Bright, Good, or Dull). Use camera position opposite your film speed (Low, Middle, or High).



A step up in one factor cancels out the effect of a step down in one or both of the others and leaves the shutter speed unaltered:

Middle Speed Film + Dull Light + Light Subject = MEDIUM SHUTTER SPEED.

The classification of daylight into Bright, Good, and Dull should be used with some thought to the time of day and year.

The above exposures apply to the middle of the day in summer.

A more accurate guide to exposure is given below.

EXPOSURE GUIDE FOR THE PURMA

1. *Find the Subject—Weather Factor*

Subject	Weather		
	Bright	Good	Dull
Light	2	3	4
Normal	3	4	5
Dark	4	5	6

2. *Add the Light Factor*

Month	Time of Day			
	9 a.m.– 11 a.m.	11 a.m.– 2 p.m.	2 p.m.– 4 p.m.	4 p.m.– 6 p.m.
May, June, July	–2	–3	–2	–1
April, August	–1	–2	–1	0
March, September ...	0	–1	0	1
February, October ...	1	0	1	2

3. *Add the Film Factor*

Film	Factor
Low speed	3
Middle speed	2
High speed	1

4. *Add the Filter Factor*

Filter	Factor
No. 1 Yellow	1
No. 2 Orange	3
No. 5 Light Green	1

5. *If the Total is:*

1 or 2: Use Fast shutter speed
3 or 4: Use Medium shutter speed
5 or 6: Use Slow shutter speed

"In Between" Shutter Speeds

If you use a meter or chart, showing a range of shutter speeds and lens apertures, you will have to use the shutter speed shown opposite the lens aperture, *f* 6.3 of the Purma lens. This speed will not always be an exact Purma speed. For ordinary snapshooting you will be safe in using the Purma speed below—i.e., slower than the one indicated by your meter or chart.

To get a more accurate adjustment of exposure you can use a suitable filter, or adapt your viewpoint to the lighting.

When you use a ×2 *filter* in front of the lens, it halves the amount of light reaching the film. This automatically halves the exposure and is thus a useful adjusting device, always provided that the effect of the filter is acceptable.

If, for example, your meter gives the correct exposure as 1/50 sec., you can use the Slow shutter speed (1/25 sec.) and add a × 2 filter. The same filter would enable you to use Medium shutter speed when the subject needs 1/300 sec., and so on. Remember that although you are shortening the *exposure*, the *shutter speed* has not been altered, so that you cannot use this trick to help you to photograph fast-moving subjects. The whole range of "in between" speeds given by filters is shown in the table on page 46.

ADJUSTING EXPOSURES WITH FILTERS

Exposure Required	*Shutter Speed*	*With Ortho Films add Filter*	*With Pan Films add Filter*
1/25	Slow	None	None
1/50–1/60	Slow	Yellow	Yellow or Light Green
1/100–1/125	Slow	—	Orange
1/150	Medium	None	None
1/300	Medium	Yellow	Yellow or Light Green
1/500–1/750	Medium	—	Orange
1/450–1/500	Fast	None	None
1/900–1/1000	Fast	Yellow	Yellow or Light Green

The exact exposure depends on the proportions of light and shade in the picture, and therefore on the direction of the lighting. If you stand with your back to the sun so that your subject is strongly lighted from the front, you can give two-thirds the exposure that you would use for a subject lighted from the side. If you shoot towards the sun, most of your subject will be in shadow and will need at least twice as much exposure as the same subject lighted from the side.

This is another way of making the subject fit the exposure when you cannot make the exposure fit the light.

Example: If the exposure given by your meter for a subject lighted from the side is 1/100 sec., by choosing your viewpoint so that the sun is behind you, you will be able to use Medium speed. (2/3 of 1/100 sec. is 1/150 sec.) Or by shooting against the light you can give Slow speed at the risk of slight over-exposure. (1/100 sec. doubled is 1/50 sec.)

However, most films allow so much latitude in exposure that you will be safe, nine times out of ten, in working to the nearest Purma shutter speed.

Lighting Angles

How the light falls on the subject does not only affect the exposure, it decisively controls the *appearance* of the subject:

Frontal Lighting eliminates shadows, destroys texture and makes the subject look flat. It is, however, useful for playing down facial wrinkles.

Side Lighting gives a good balance of light and shade, emphasises relief, and adds modelling.

Back Lighting suggests depth and space and is good for striking and dramatic effects.

High Angle Lighting casts marked vertical shadows which are bad for portraiture and generally unnatural.

Low Angle Lighting adds pictorial quality, and casts long sideways shadows, enriching texture and modelling.

The same rules hold good by artificial light and although the Purma is first and foremost an out-door camera, those who want to work indoors with it can do so within limits.

SHUTTER SPEEDS FOR PHOTOFLOOD ILLUMINATION

Lamps in good reflectors shining at an average angle of 45° to camera-subject line. High speed pan film.

Distancee Lamp-Subject in feet	*One Lamp*			*Two Lamps*			*Three Lamps*		
	Light	*Med.*	*Dark*	*Light*	*Med.*	*Dark*	*Light*	*Med.*	*Dark*
2	M+	S	–	M+	M+	S+	M+	M+	S+
4	S	–	–	S+	S	–	S+	S	–
6	–	–	–	–	–	–	S	–	–

Where the lighting is strong enough to allow for a blue filter, the shutter speed is shown thus: M+, S+.

Why a Lens Hood

The lens hood prevents unwanted light from falling on the front of the lens, and is probably the most important "extra" that can be carried. Stray light is apt to strike the lens from so many unsuspected quarters that the only really safe rule is: *always use a lens hood*, no matter where, when, or what you are photographing.

It is even more important to use the lens hood with a colour filter or supplementary lens, since both add reflecting surfaces which increase the effect of stray light.

The Purma lens hood is a black plastic moulded tube which screws on to the front of the camera in place of the lens cap. The open end narrows, forming a real hood in contrast to the conventional funnel-shaped fitting. The method of attaching the lens hood makes it independent of any filter or supplementary lens in use at the time.

•

WHEN THE SUBJECT IS MOVING

No Purma photographer should be content to think only in terms of static effects.

No matter how quickly the shutter operates when photographing a moving subject, it remains open for a definite length of time during which the subject moves and produces a blurring of the image. But so long as the blur is too small to be seen by the naked eye it does not matter. So, by keeping the blur small enough, we can "arrest" movement in the picture.

Factors that control the amount of blur are the speed of the subject, its distance, and its direction.

When we know these three things, we can work out the slowest shutter speed that will produce no visible blur.

Speed

The moving subjects you will want to shoot will be anything from slow-moving walkers to fast-moving motor-cars, and each will call for a different shutter speed. The Purma has only three shutter speeds to deal with them, however, and for the sake of simplicity three groups will serve.

Easy: Up to 15 m.p.h. Walkers, cyclists, animals moving at normal speed.

Brisk: 15 to 30 m.p.h. People in a hurry on foot or cycle, waves, and machines—trains, motor cars *not* in a hurry.

Quick: 30 to 60 m.p.h. Motor cars and railway trains in a hurry.

Quick subjects need the shortest exposure, *Brisk* can be given twice as much, and *Easy* four times as much.

Distance from the Camera

Movement near the camera calls for a higher shutter speed to arrest it than the same movement at a greater distance. For convenience, the distance of the subject from the camera can be divided into three zones:

Near: 10 to 20 ft. (3 to 6 m.).
Midway: 20 to 40 ft. (6 to 12 m.).
Far: 40 to 80 ft. (12 to 24 m.).

For the same subject, the exposure can be doubled for each zone going away from the camera.

Direction

There is more apparent movement in a subject which is crossing the line of sight at right angles than when it is approaching or going away. Three conditions are enough to meet the practical requirements of Purma photography:

Across: Subject moving across field at right angles to the line of sight.
Oblique: Subject moving at 45° to line of sight.
In Line: Subject moving along line of sight.

Give the shortest exposure for the first; twice as long for the second, and three times as long for the third. It makes no difference whether the subject is moving forwards or backwards, to the right or to the left.

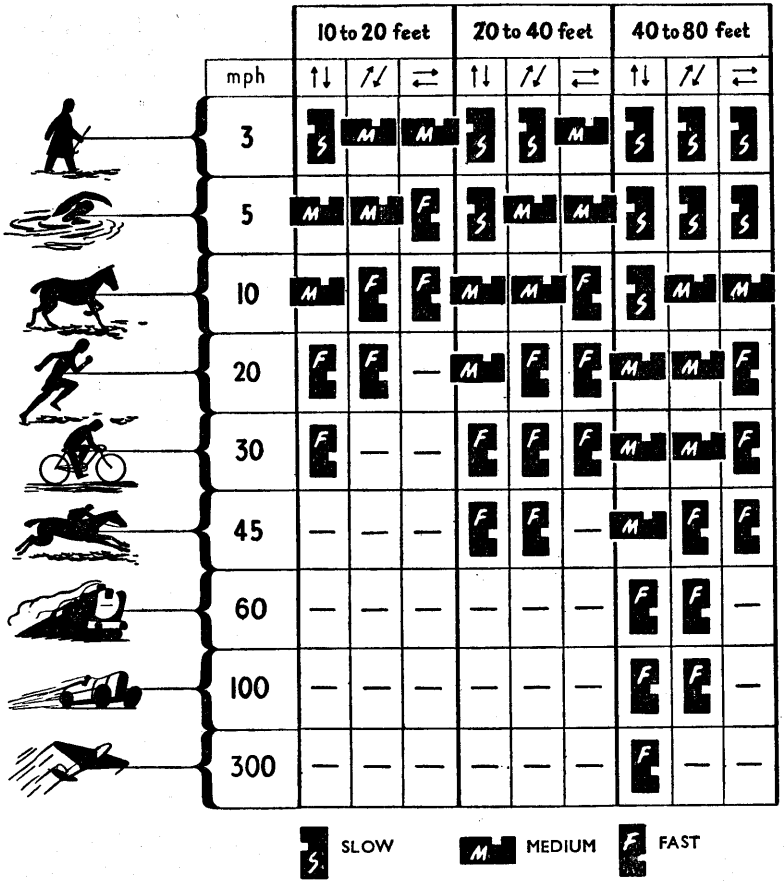
The slowest shutter speeds which will arrest movement for the whole range of speeds, distances, and directions, are given on page 51.

Swinging the Camera

If a fast moving subject moves *as a whole*, it will appear sharp if you *swing the camera* to keep it steady in the viewfinder. In swinging the camera, sight the subject and centre it in the viewfinder well in advance of the actual exposure. In this way you will have time to become accustomed to the trick of holding the subject and moving the camera with it. A little before the spot where you want the shutter to release, start squeezing the release button, and let it click when it will. You may be a little late or a little early, but you will get a sharp picture of your subject, reasonably placed in the viewfinder. If you try to release the shutter at a very definite point you will forget to keep swinging, jerk the camera, and have nothing to show on the film but an illustration of how not to do it.

By swinging the camera you can use a slower shutter speed. Your background will, however, be blurred.

EXPOSURES TO ARREST MOVEMENT



The slowest shutter speed that will give a sharp picture of a moving subject depends upon: **1.** How fast the subject is moving. **2.** How far it is from the camera. **3.** Whether it is moving along, across, or at an angle to the sighting line. With the Purma, the shutter speed is already fixed by the lighting conditions, so you must tackle movement by adjusting your position and angle of shooting.

Changing Motion

Many movements have easily recognised "dead spots". The high-jumper as he clears the bar, the golfer at the end of his swing, the horse and rider just over the hurdle, are examples of "dead spots" where the movement is relatively slow. These are the instants to choose for shooting, particularly when you are forced to use a slow shutter speed. Practice with the empty camera until you have mastered the knack of taking up the first pressure on the shutter release so that a final squeeze will make it click.

Walking, running, cycling, and rowing are examples of movement which need special treatment. The body of a man doing any of these things may be moving slowly, but the speed of his arms and legs will call for a very short exposure. For this reason, shots of people moving at right angles to the camera and less than twenty feet away must be taken at the Fast shutter speed. As Fast can only be given under ideal lighting conditions, it is better to shoot this sort of subject at an angle, when Medium speed will arrest the entire movement.

AT LESS THAN TEN FEET

The Purma lens gives a sharp picture of all objects beyond 10 ft., but nearer than this objects are no longer sharp.

To work closer, however, we can use supplementary lenses—also called "portrait attachments"—which fit in front of the camera lens.

The Purma Supplementary Lenses

There are six lenses, covering all distances from 18 in. (46 cm.) to 10 ft. (3 m.).

1. For subjects 18 in. (46 cm.) from the camera.
2. For subjects 24 in. (61 cm.) from the camera.
3. For subjects 32 in. (82 cm.) from the camera.
4. For subjects between 3½ and 5 ft. (1–1.5 m.) from the camera.
5. For subjects between 5 and 7½ ft. (1.5–2.3 m.) from the camera.
6. For subjects between 7½ and 10 ft. (2.3–3 m.) from the camera.

These lenses are mounted in the same way as the colour filters—in a black plastic ring with a spring band curved to grip the lens mount. Lens and mount are sold together, the outer face of the mount has the working range of the lens printed on it.

To attach a supplementary lens, simply remove the camera lens cap and press the spring clip over the camera lens mount from the side. To remove the supplementary lens, simply pull it off *forwards*.

The surfaces of these supplementary lenses are as delicate as that of the camera lens itself. Avoid dulling them with fingermarks and keep them away from dust.

The viewfinder of the Purma is 1¼ in. above the camera lens so that the picture it sees is always just that amount above the picture that the lens sees. This effect, known as parallax, is too small to be noticed in photographs of objects beyond 10 ft., but when working with supplementary lenses it can be serious. When taking photographs at close range, therefore, allow a little extra room at the top of the picture in the viewfinder.

This holds for the Medium speed position. With the camera in the Fast or Slow speed positions, the finder is to the side of the lens. So allow that extra room in the finder on the side away from the camera.

Using the Supplementary Lenses

A supplementary lens will give a sharp image of everything in the range of distances marked on the mount. It goes further than that; it reproduces the subject as it sees it from its unnaturally close point of view, and the final print is apt to be disappointing.

If the photograph is a portrait, then the features that were closest to the camera appear exaggerated in proportion to the rest of the face.

The closer the viewpoint, the greater the distortion; the effect is more obvious with the 18 in. lens than the 5 to 7½ ft. lens. This disadvantage is common to all such lenses and should always be borne in mind when using them.

The range of supplementary lenses for the Purma can be divided into three groups:

SUPPLEMENTARY LENSES: 18 in., 24 in., 32 in. (46 cm., 61 cm., 82 cm.). The important thing with these lenses is to avoid subjects where some parts are very much closer to the camera than others. A perfectly flat surface presents no difficulties, and such subjects as carved panels where the carving is not more than an inch or two deep will be reproduced without distortion.

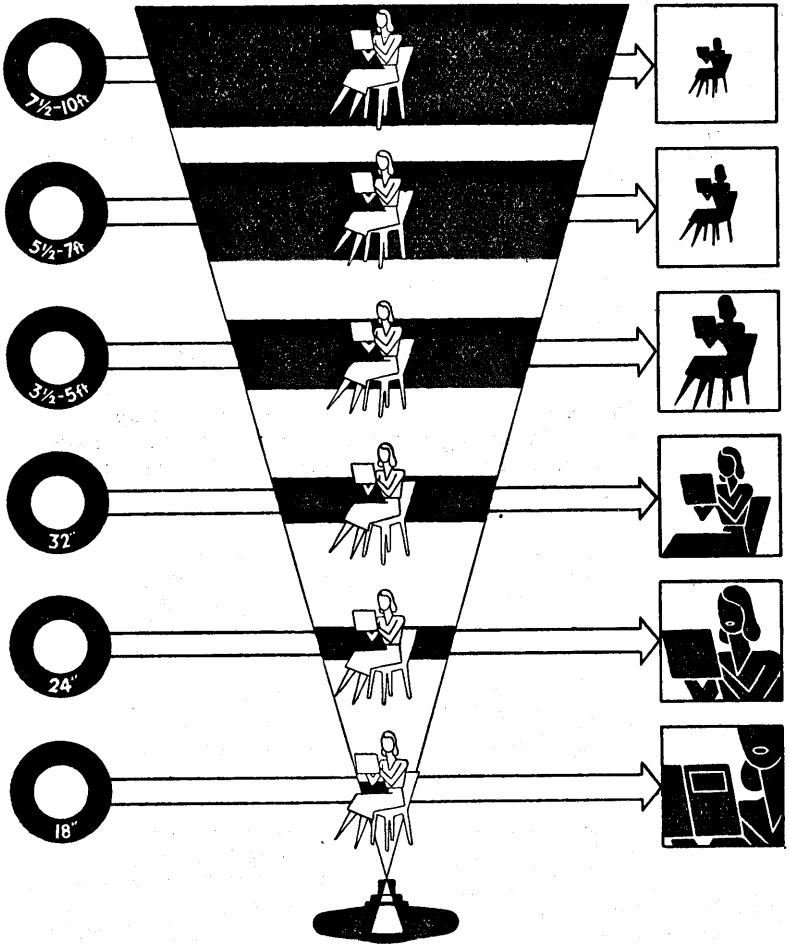
The zone of sharpness is very narrow, and the distance from the front of the lens to the subject should be measured and not guessed.

A very full exposure (about twice normal) must be given when working as close as this because shadow detail is much more necessary in a close-up than in a distant shot. In most cases the use of a white reflector to light up the shadows will improve the picture.

Portraiture with any of these lenses needs care to avoid foreshortening.

SUPPLEMENTARY LENS: 3½ to 5 ft. (1 to 1.5 m.). The distortion at this distance is not serious in photographs of small animals, flowers and all subjects where there is not more than 12 in. (30 cm.) between the nearest and most distant parts. When taking photographs of pets, lie down on the ground to bring the camera level with the subject and arrange for the general lines of the animal's body to be across the line of sight. In this way, all parts of the subject will be sharp and in reasonable proportion.

WHAT HAPPENS WHEN YOU USE SUPPLEMENTARY LENSES



With a supplementary lens the camera works at less than 10 feet and sees less of the subject but on a bigger scale. The closer the lens works, the narrower its zone of sharpness. This is shown by the depth of the black bands opposite each lens.

Even this lens works too close to the subject to give good human portraits except perhaps in profile.

SUPPLEMENTARY LENSES: 5 to 7½ ft. and 7½ to 10 ft. (1.5 to 2.3 m. and 2.3 to 3 m.). Supplementary lenses are often called "portrait attachments", suggesting that portraits are a form of "close-up" photography. The truth is that the most natural portraits are taken with the camera at least 12 feet away from the sitter. If you want a large image with these supplementary lenses you must be prepared for some distortion.

Look out for prominent features and don't let them point towards the lens. Avoid shooting a big chin from a low viewpoint or a Shakespearian brow from a high one. At this distance, too, your sitter's arms and hands will be in the picture and will call for careful arrangement or they will look unnaturally large.

These lenses are useful for architectural detail and such subjects as exterior carvings and sculpture.

Snapshooters should carry the 5 to 7½ ft. lens, in particular, as a standard item in their kit.

If you want to use a colour filter with a close-up lens, remove the retaining ring from the filter mount, and take out the filter glass. Put it over the camera lens before you clip on the close-up lens.

SNAPSHOOTING WITH THE PURMA

Why

When any camera claims to be universal, there is usually one job that it will do better than others, and with the Purma that job is unquestionably snapshooting. In a class of photography that calls first and foremost for speed in getting into action, it can be quicker "on the draw" than any other camera, however expensive.

It is an ideal camera for snapshooting because: (1) It does not have to be focused. (2) It has a fixed aperture. (3) The shutter speed adjustment is automatic. (4) It can be used on most out-door occasions throughout the year.

How

You can snapshoot your subject with the Purma with little more trouble than it takes to look at it, but you won't take good snapshots unless you understand the limitations of the camera and how to overcome them. There are three things to remember:

Everything beyond 10 ft. (3 m.) is sharp.
Everything under 10 ft. is blurred.
The negative is very small.

EVERYTHING BEYOND 10 FT. IS SHARP. When you look at something that interests you, you are only vaguely aware of the background and surrounding objects. When the Purma lens looks at the same subject, however, it sees the whole of the picture area with the same impartial clarity. It looks beyond the smiling young lady in the deck chair and sees the untidy garden fence, the corner of the chicken house, and the next-door neighbour's wireless pole, all equally sharp. Almost certainly the snapshot will show the wireless pole growing out of the young lady's head and you are also likely to find that a patch of bright sunshine on the end of the chicken house has stolen the picture. This failing is shared by all fixed-focus cameras and is part of the price that has to be paid for doing away with the trouble of focusing.

Since the whole of the picture is sharp, including the subject, you must get rid of the things you don't want to come out in the snap in one of the following ways:

Choose a plain background for your subject—a grassy bank, the wall of a house, the sea.

Shoot from a low angle and use the sky as your background. Darken the blue sky with a filter and you will improve the picture even more.

Work close to your subject so that the unwanted objects do not appear in the picture. The further you are away from your subject, the more of the scene you include.

Shoot from a viewpoint that shows your subject against a dark area of the scene. There is usually some patch of shadow—under trees or on the shaded side of the street—against which a well-lighted subject will stand out.

EVERYTHING UNDER 10 FT. IS BLURRED. Do not be deceived by the sharp appearance of near objects in the viewfinder; the camera lens looks at things differently and sees nothing sharp less than 10 ft. away. Learn to estimate this distance correctly, or be on the safe side and pace it out. Three long strides from your subject will put you at the minimum working distance. Remember that the negative will have to be enlarged, and any trace of blur will be magnified in the final photograph. You can make your subject as big as you like by enlarging, provided that it is sharp on the negative, but if you try to increase the size by shooting at less than 10 ft., even a contact print the same size as the negative will be blurred.

For close-up portraits or subjects too small to give a satisfactory picture on the negative at 10 ft., however, you can use an extra lens with the camera (see p. 53).

THE NEGATIVE IS VERY SMALL. As the negative taken by the Purma is only $1\frac{1}{4}$ in. square—or just over twice the size of a postage stamp—a contact print from it is too small to be of much use, and you will almost always want to enlarge it. The bigger you make an enlargement, the more you are troubled by the grain of the film (see p. 19), blemishes caused by dust and scratches on the negative, and

unsharpness. All these imperfections become less serious if the amount of enlargement can be kept down, and the way to do this is to make the subject fill the whole of the picture space. Work as close to the subject as possible and arrange it in the viewfinder with the idea of enlarging the whole of the negative, not merely a bit of it. The warning to keep beyond 10 ft. from your subject does not mean that you will get twice as good a picture at 20 ft. So don't fall into the lazy habit of allowing a wide margin of safety. If there are horizontal lines in the picture, see that they are parallel to the top and bottom edges of the viewfinder or you will waste negative space when you square them up in the enlarger.

What

There is no close season for out-door snapshooting with the Purma, and almost no limit to your choice of subject. Slipped into your pocket, or slung in front of you in its Ever-ready case, your Purma is always on call for jotting down photographic memoranda of people, scenes, and events that interest you. For this type of work there is no need to burden yourself with an elaborate kit: the Purma, a lens hood, and a ×2 Yellow filter and perhaps one of the supplementary lenses are all you need to trouble about.

SNAPSHOTS AT HOME. Most of your snapshooting at home will be done in the garden. Avoid fussy backgrounds—an easy matter when shooting a conventional portrait, but not so easy when you want to get unposed shots. You should, however, try for unposed effects because people always photograph best when they are busy.

When you take snapshots of children or pets, get down to their level, or they will look stunted. Wait until your subject has lost interest in you and your camera before you shoot and you will get a natural result.

SNAPSHOTS AWAY FROM HOME. Make a running record of the things you will want to remember and talk about when you get back. Make it a *personal* record or you

might just as well buy picture postcards and save yourself the trouble of carrying a camera. Don't waste film on the magnificent view you climbed to admire. Make your snapshots on the way: the acquaintances who shared the climb; the party getting their breath before the steep section; the glass of beer outside the inn on the way back. Leave the famous view to the specialist photographer.

If you want to take snaps of buildings that interest you, try to avoid pointing your camera up at them or they will look as though they were toppling backwards. If you cannot find a viewpoint high enough to include the whole building with the camera pointing level, be satisfied with a characteristic bit of it.

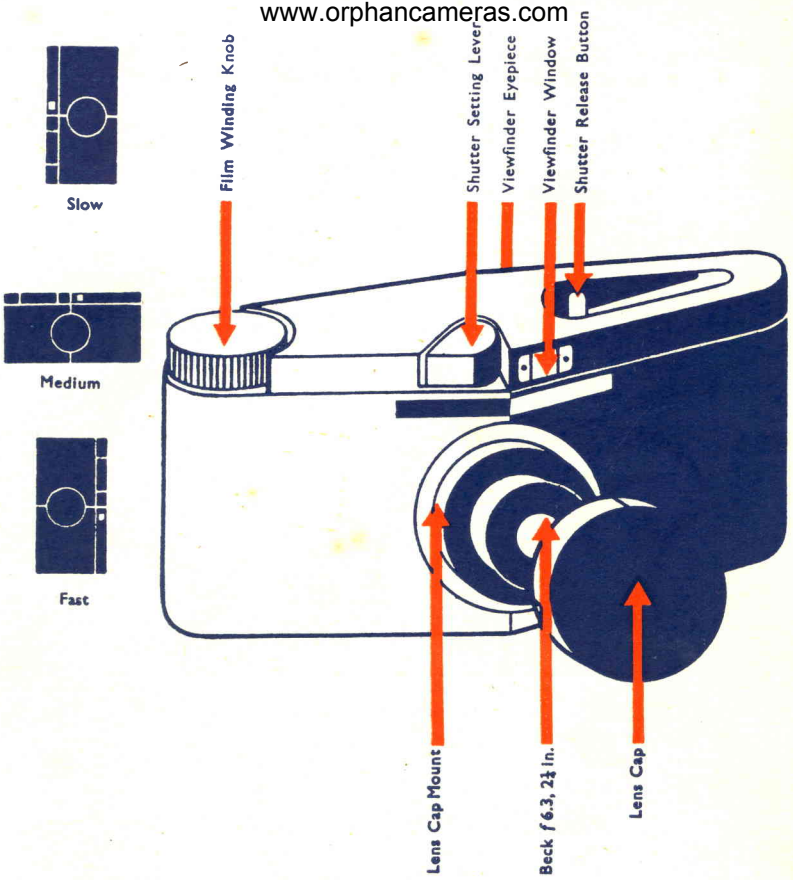
The appearance of the building will depend very much on how the light strikes it. Snap it if you can with the sun shining at an angle so that it shows up the architectural detail in relief.

And on to Pictures

Just as the pencil in your waistcoat pocket is equally good at jotting down an interesting quotation, writing an essay, or producing a serious work of art, your Purma will turn out casual snaps or serious pictures according to how you use it.

However good your technique, unless your picture has something to say, it will be either a meaningless arrangement of light and shade, or a stale repetition of what somebody else has already rendered second-hand.

But the important thing is the idea. Good pictures are made by simplicity and clarity of expression; think about the things you want to photograph; seek them out and photograph them where you find them, striving to show just what it is about them that stirs you. When you succeed in producing something that really satisfies you, it will probably be a good picture.



- *How to load: page 10*
- *How to expose: page 12*
- *How to unload: page 14*
- *How to choose the film: page 19*
- *How to use the filters: page 23*
- *How to take close-ups: page 53*

FOR FULL REFERENCE SEE PAGE 61